ESP Print Pro Software Administrators Manual

ESP−002−20000224

Table of Contents

Table of Contents

Table of Contents

About This Guide

The ESP Print User's Guide explains how to install and configure the ESP Print Pro software on your systems. This guide assumes that you know how to perform basic system administration tasks on your systems.

Organization of This Guide

This guide is organized into seven chapters and three appendices:

- Chapter 1, "Introduction to ESP Print Pro", introduces ESP Print Pro.
- Chapter 2, "Installing the Software", shows you how to install the software on your systems.
- Chapter 3, "GUI Printer Management", describes how to manage printers and printer classes using the ESP Printer Manager.
- Chapter 4, "Printer Management from the Command−Line", explains how to how to manage printers and printer classes from the command−line.
- Chapter 5, "Printing System Management", covers the configuration files used by the ESP Print Pro software.
- Chapter 6, "Printer Accounting", describes the printer accounting features in ESP Print Pro.
- Chapter 7, "Client System Configuration", covers how to setup and maintain client systems.
- Appendix A, "Network Interface Reference", provides a network printer configuration reference for many brands of network printers and printer servers.
- Appendix B, "Solving Common Printing Problems", lists the common problems encountered when setting up and using the ESP Print Pro software and their solutions.
- Appendix C, "List of Installed Files", lists the files that are installed for the ESP Print Pro software.
- Appendix D, "Using ESP Print Pro with SAMBA", describes how to use ESP Print Pro with the

SAMBA software for your UNIX and Microsoft Windows network printing needs.

How to Use This Guide

If you are new to the ESP Print Pro software, you will probably want to read Chapters 1, 2, and 3. Additionally, Appendix A provides a good resource for network printers and print servers.

Notation Conventions

Various font and syntax conventions are used in this guide. Examples and their meanings and uses are explained below:

Example	Description
`lpwin` `lpwin(1)`	The names of commands; the first mention of a command or function in a chapter is followed by a manual page section number.
/var */usr/share/cups/data/testprint.ps*	File and directory names.
`Request ID is Printer-123`	Screen output.
`lp -d printer filename` **`ENTER`**	Literal user input; special keys like **`ENTER`** are in ALL CAPS.
12.3 1,000,000	Numbers in the text are written using the period (.) to indicate the decimal point and commas (,) before every third digit to the left of the decimal point.

Abbreviations

The following abbreviations are used throughout this manual:

kb

Kilobytes, or 1,024 bytes

Mb

Megabytes, or 1,048,576 bytes

Gb

Gigabytes, or 1,073,741,824 bytes

Other References

ESP Print Pro Software Users Manual

A guide for using the ESP Print Pro software.

Chapter 1
Introduction to ESP Print Pro

This chapter describes the overall features and capabilities of the ESP Print Pro software and the underlying Common UNIX Printing System.

The Printing Problem

For years *the printing problem* has plagued UNIX®. Unlike Microsoft® Windows® or MacOS, UNIX has no standard interface or system in place for supporting printers. Among the solutions previously available, the Berkeley and System V printing systems are the most prevalent.

These printing systems support line printers (text only) or PostScript printers (text and graphics), and with some coaxing they can be made to support a full range of printers and file formats. However, because each varient of the UNIX operating system uses a different printing system than the next, developing printer drivers for a wide range of printers is extremely difficult. That combined with the limited volume of customers for each UNIX varient has forced most printer vendors to give up supporting UNIX entirely.

ESP Print Pro is designed to eliminate *the printing problem*. One common printing system can be used by all UNIX varients to support the printing needs of users. Printer vendors can use its modular filter interface to develop a single driver program that supports a wide range of file formats with little or no effort. Since ESP Print Pro provides both the System V and Berkeley printing commands, users (and applications) can reap the benefits of this new technology with no changes.

The Technology

ESP Print Pro is based upon an emerging Internet standard called the Internet Printing Protocol, or IPP. IPP has been embraced by dozens of printer and printer server manufacturers, and will be supported by the next Microsoft Windows operating system.

IPP defines a standard protocol for printing as well as managing print jobs and printer options like media size, resolution, and so forth. Like all IP−based protocols, IPP can be used locally or over the Internet to printers hundreds or thousands of miles away. Unlike other protocols, however, IPP also supports access control, authentication, and encryption, making it a much more secure printing solution than older ones.

IPP is layered on top of the Hyper−Text Transport Protocol, or HTTP, which is the basis of web servers on the Internet. This allows the user to view documentation and status information on a printer or server using their web browser.

ESP Print Pro provides a complete IPP/1.0−based printing system that provides Basic authentication and domain or IP−based access control. Digest authentication and TLS encryption will be available in future versions of ESP Print Pro.

Jobs

Each file that is submitted for printing is called a *job*. Jobs are identified by a unique number starting at 1 and are assigned to a particular destination (usually a printer). Jobs can also have options associated with them such as media size, number of copies, and priority.

Classes

ESP Print Pro supports collections of printers known as *classes*. Jobs sent to a class are forwarded to the first available printer in the class.

Filters

Filters allow a user or application to print many types of files without extra effort. Print jobs sent to a ESP Print Pro server are filtered before sending them to a printer. Some filters convert job files to different formats that the printer can understand. Others perform page selection and ordering tasks. *Backend* filters perform the most important task of all − they send the filtered print data to the printer.

ESP Print Pro provides filters for printing many types of image files, HP−GL/2 files, PDF files, and text files. ESP Print Pro also supplies PostScript and image file Raster Image Processors, or RIPs, that convert PostScript or image files into bitmaps that can be sent to a raster printer.

ESP Print Pro provides backends for printing over parallel and serial ports, and over the network via the JetDirect (AppSocket), Server Message Block, Line Printer Daemon, and IPP protocols.

Printer Drivers

Printer drivers in ESP Print Pro consist of one or more filters specific to a printer. ESP Print Pro includes drivers for over 1600 printers.

Networking

Printers and classes on the local system are automatically shared with other systems on the network. This allows you to setup one system to print to a printer and use this system as a printer server or spool host for all of the others. If there is only one occurrence of a printer on a network, then that printer can be accessed using its name alone. If more than one printer exists with the same name, users must select the printer by specifying which server to use (e.g. "printer@host1" or "printer@host2".)

ESP Print Pro also provides *implicit classes*, which are collections of printers and/or classes with the same name. This allows you to setup multiple servers pointing to the same physical network printer, for example, so that you aren't relying on a single system for printing. Because this also works with printer classes, you can setup multiple servers and printers and never worry about a "single point of failure" unless all of the printers and servers go down!

Chapter 2
Installing the ESP Print Pro Software

This chapter describes how to install the ESP Print Pro software and license for your system. If your system configuration differs from the examples given in this chapter you may wish to consult the documentation that came with the system.

Software Requirements

ESP Print Pro can only be used on systems running:

- Compaq Tru64® UNIX 4.0 or higher
- Digital UNIX® 4.0 or higher
- HP−UX 10.20 or higher
- IRIX® 5.3 or higher
- Linux 2.0 or higher
- Red Hat Linux 5.2 or higher
- Solaris® 2.5 or higher

If you are uncertain about the operating system version on your system, type the following command at a shell prompt:

```
# uname −r ENTER
```

Disk Space Requirements

ESP Print Pro requires a minimum of 5Mb of disk space. Additional space is required for the printer drivers, for a total of about 15Mb. The software is installed in the following directories:

- */etc/software* − Software distribution information and system identification.
- */usr/bin* − User commands.
- */usr/include/cups* − CUPS API header files.
- */usr/lib* − CUPS API DSOs.
- */usr/sbin* − Administator commands.
- */usr/share/cups* − Platform−independent data files.
- */var/cups* − Platform−dependent backend, configuration, data, filter, and log files.

Temporary Disk Space Requirements

Additional disk space may be used during printing for temporary storage; temporary files are normally created in */var/tmp*, however this can be overridden by setting the `TMPDIR` environment variable for user and administrator commands, or by setting the `TempDir` directive in the */var/cups/conf/cupsd.conf* file.

The PostScript® Raster Image Processor (RIP) used for non−PostScript printers may create a page swap file if the size of the page image exceeds the RIP cache; the default size of the RIP cache is 10Mb. The actual amount of disk space used varies depending on the size and resolution of the print job and can be estimated with one of the following formulas:

- Black & White Printers:

  *bytes = page−width * page−height * resolution * resolution*

- Color Printers:

  *bytes = page−width * page−height * resolution * resolution * 4*

The Image RIP used for printing image files may require additional temporary disk space during printing as well. The amount of disk space used is based on the image size (*not* the page size as for the PostScript RIP) and can be estimated using one of the following formulas:

- Black & White Printers:

  *bytes = image−width * image−height*

- Color Printers:

  *bytes = image−width * image−height * 4*

Before You Begin

You must be logged onto your system as the root user to install the software.

Also, it is worth noting that ESP Print Pro will replace the existing printing system installed on your system with the Common UNIX Printing System. The original software is restored if you remove ESP Print Pro from your system.

Loading Software From CD−ROM

To install the ESP Print Pro software from CD−ROM, insert the CD−ROM into your CD−ROM drive and login to the root account on your system.

Mounting the CD−ROM

Some operating systems automatically mount the CD−ROM media when it is inserted in the CD−ROM drive. If your system does not do this, run one of the following commands to mount the CD−ROM:

- Compaq Tru64 UNIX
- Digital UNIX
- OSF/1

```
% mkdir /cdrom ENTER
% mount −o ro,rrip −t cdfs /dev/rz4a /cdrom ENTER
```

- HP−UX

```
% mkdir /cdrom ENTER
% mount −o ro,cdcase −F cdfs /dev/dsk/c1t2d0 /cdrom ENTER
```

- Linux
- Red Hat

```
% mount /mnt/cdrom ENTER
```

Running the Software Installation Script

To run the software installation script type one of the following commands:

- Compaq Tru64 UNIX
- Digital UNIX
- HP−UX
- OSF/1

```
% /cdrom/install.sh ENTER
```

- IRIX

```
% /CDROM/install.sh ENTER
```

- Linux
- Red Hat

```
% /mnt/cdrom/install.sh ENTER
```

- Solaris

```
% /cdrom/esp/install.sh ENTER
```

The installation script will ask you a few questions and then installs the desired software on your system.

Loading Software From the Internet

Software updates can be obtained from the Internet using a World−Wide−Web browser such as *Netscape Navigator* 2.0 or higher from the following URL:

- http://www.easysw.com/software.html

Installation instructions are provided online for your convenience.

Getting Software Licenses

ESP Print Pro must be licensed on each system that talks directly to a printer. Please contact Easy Software Products or the reseller that sold the software to you for your software license. The order number provided with your software can also be used to request the software license on−line at:

- http://www.easysw.com/license.html

Once you have your software license, follow the instructions included with the license to add it to your system.

Making a Backup of Your Software Licenses

Since many newer computers do not provide hardware serial number information, it is extremely important to make a backup of your software licenses. To do so, copy the files in the `/etc/software` directory.

Should you ever re−install the operating system or build a new boot disk for your computer, simply restore the files in the `/etc/software` directory to re−license your ESP Print Pro software.

Removing the ESP Print Pro Software

Should you ever need to remove the ESP Print Pro software, you can do so by running the `.remove` scripts in the `/etc/software` directory. For example, if you have the ESP Print Pro base software and the HP printer drivers loaded type:

```
% /etc/software/printpro−hp.remove ENTER
% /etc/software/printpro.remove ENTER
```

Chapter 3
GUI Printer Management

This chapter shows you how to manage printers and printer classes on your system.

The Printer Manager

ESP Print Pro includes a graphical Printer Manager called `printers(8)` which allows you to view, add, modify, and delete printer queues and printer classes on your system.

To start the Printer Manager (Figure 1) type:

```
% /usr/sbin/printers ENTER
```

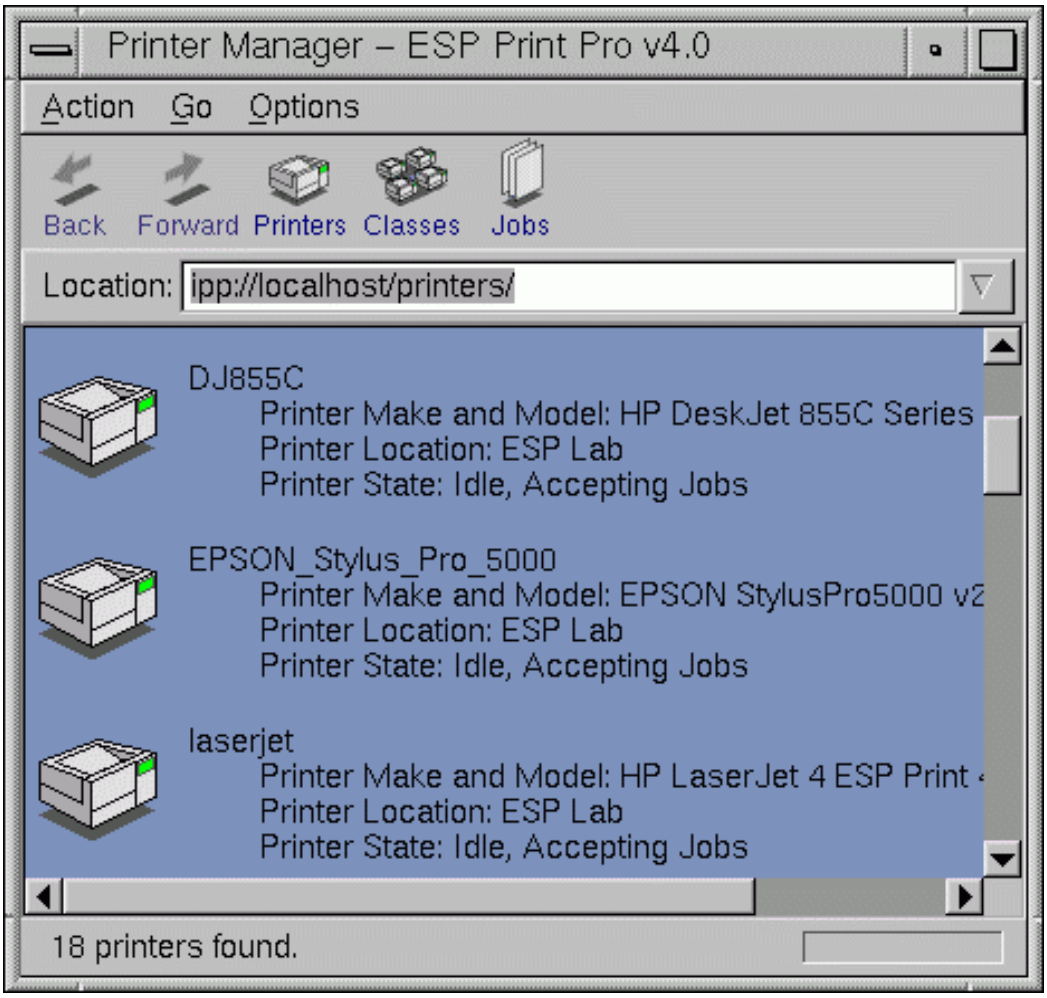

Figure 1 − The ESP Printer Manager.

Adding a Printer to the System

To add a printer to the system, start the printer manager as described earlier and choose *Add...* from the *Action* menu. This will start the ESP Printer Wizard (Figure 2.)

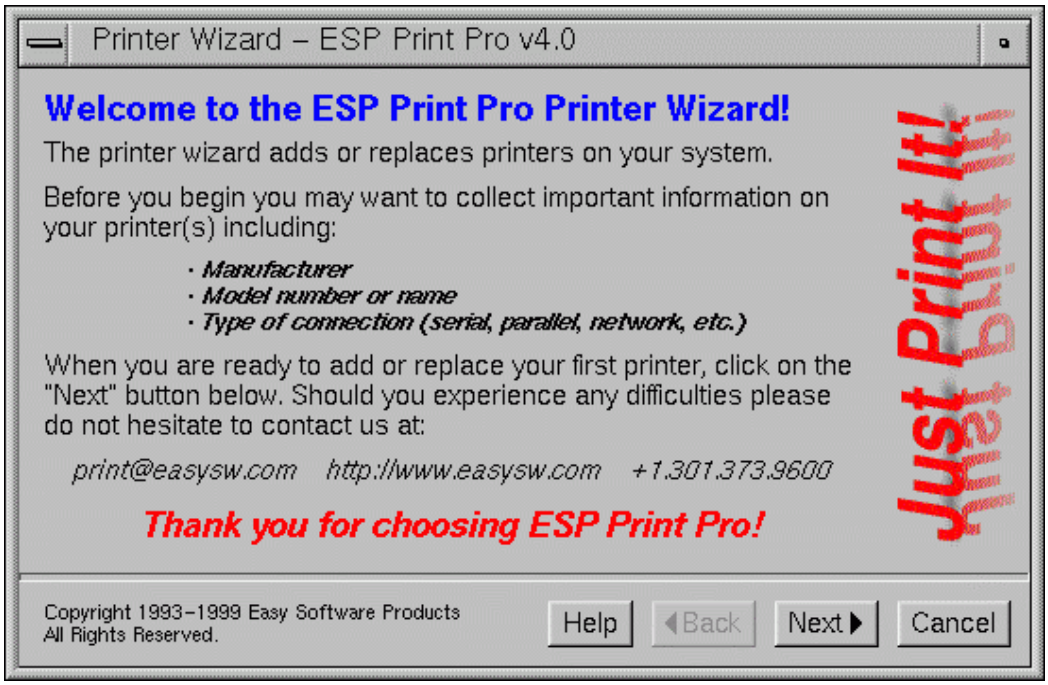

Figure 2 − The Printer Wizard Welcome Page.

The Welcome Screen

The welcome screen is the first thing you will see when adding a printer. To proceed with printer installation simply click on the *Next* button.

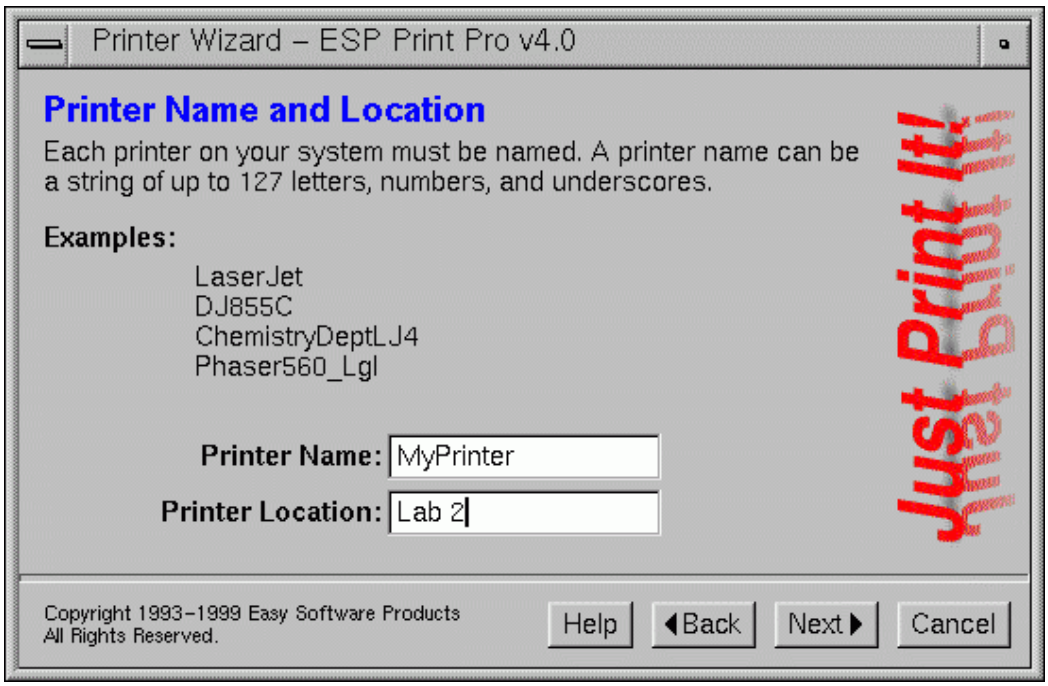

Figure 3 − The Printer Wizard Name Page.

Setting the Printer Name and Location

The printer name uniquely identifies a printer on your workstation. Type the name of the printer on the keyboard and press **ENTER**. The printer name can be up to 127 letters, numbers, and underscores.

The location is a textual string that describes the location of the printer. It can be any string up to 127 characters and is displayed in the Printer Manager's printer list.

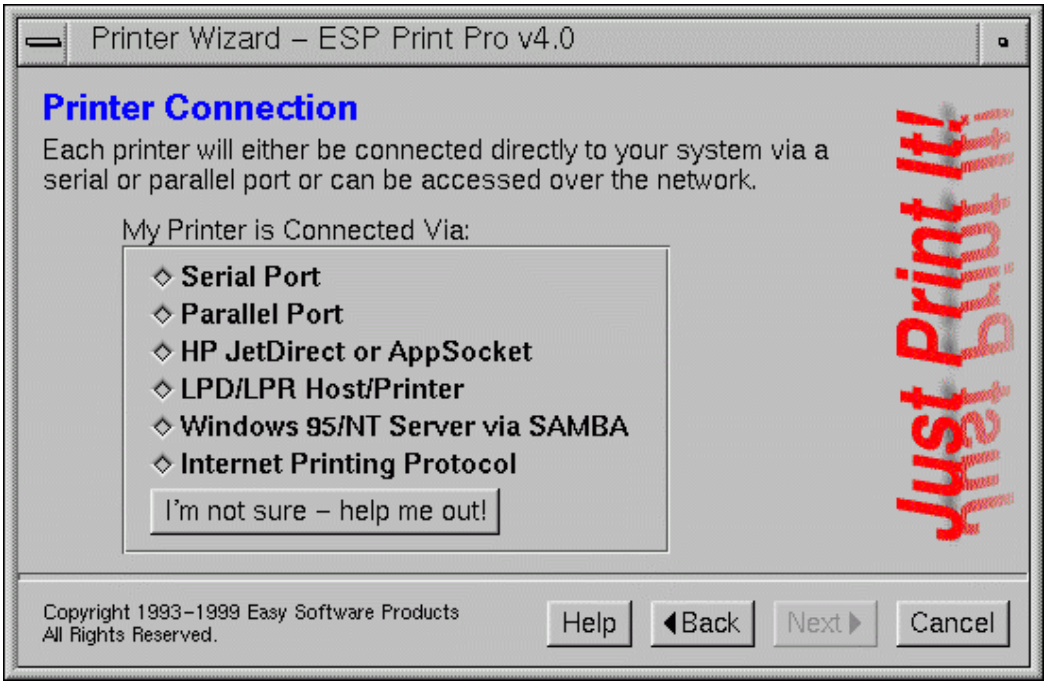

Figure 4 − The Printer Wizard Connection Page.

Choosing the Printer Connection

After you enter a name for your printer you will next be asked about how the printer is connected to the system (Figure 8). Choose the button that corresponds to your printer's connection and click on the *Next* button.

If you have a network printer and are unsure about the type of connection to use, see Appendix A.

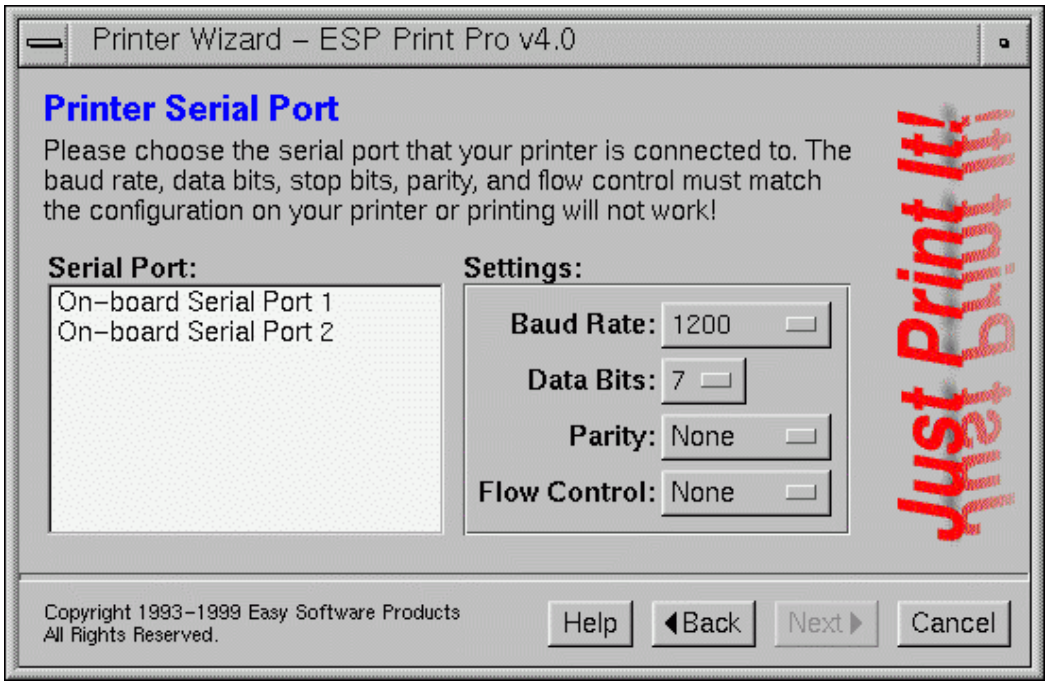

Figure 5 − The Printer Wizard Serial Port Selection Page.

Choosing a Serial Port

The serial port selection page appears if you choose *Serial* on the connection page. To select a serial port move the mouse pointer over the desired serial port in the list and click the left mouse button.

Once you have selected the serial port, choose the baud rate, data bits, parity, and flow control necessary for your printer (these values should be documented in your printer's user manual.)

Click on the *Next* button to proceed.

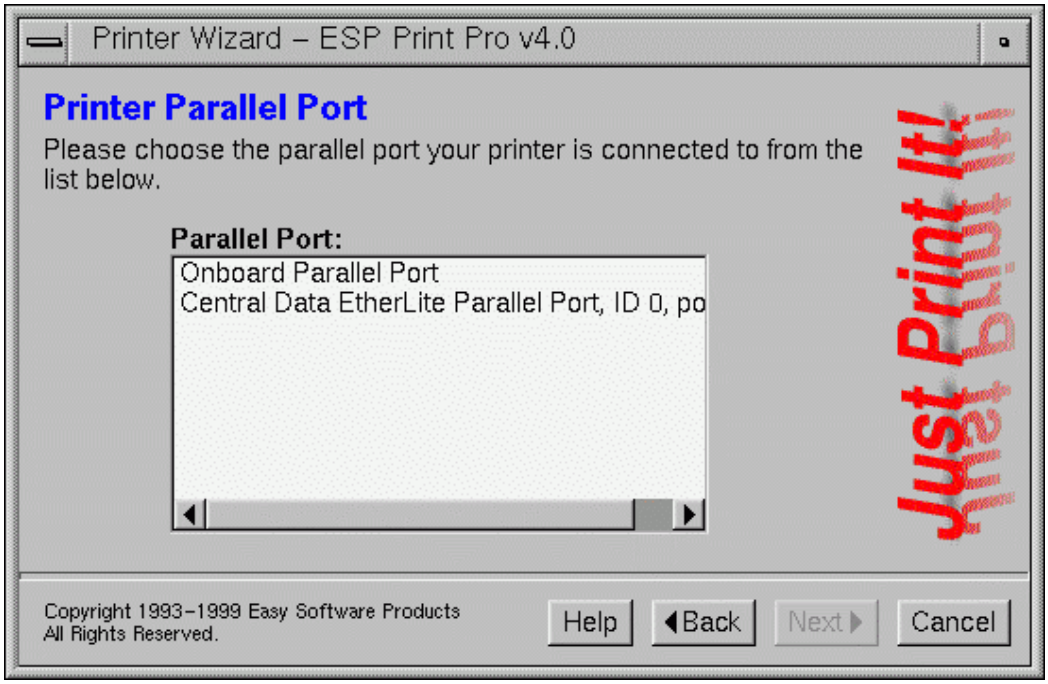

Figure 6 − The Printer Wizard Parallel Port Selection Page.

Choosing a Parallel Port

The parallel port selection page appears if you choose *Parallel* on the connection page and have more than one parallel port device on your system. To select a parallel port move the mouse pointer over the desired parallel port in the list and click the left mouse button.

Click on the *Next* button to proceed.

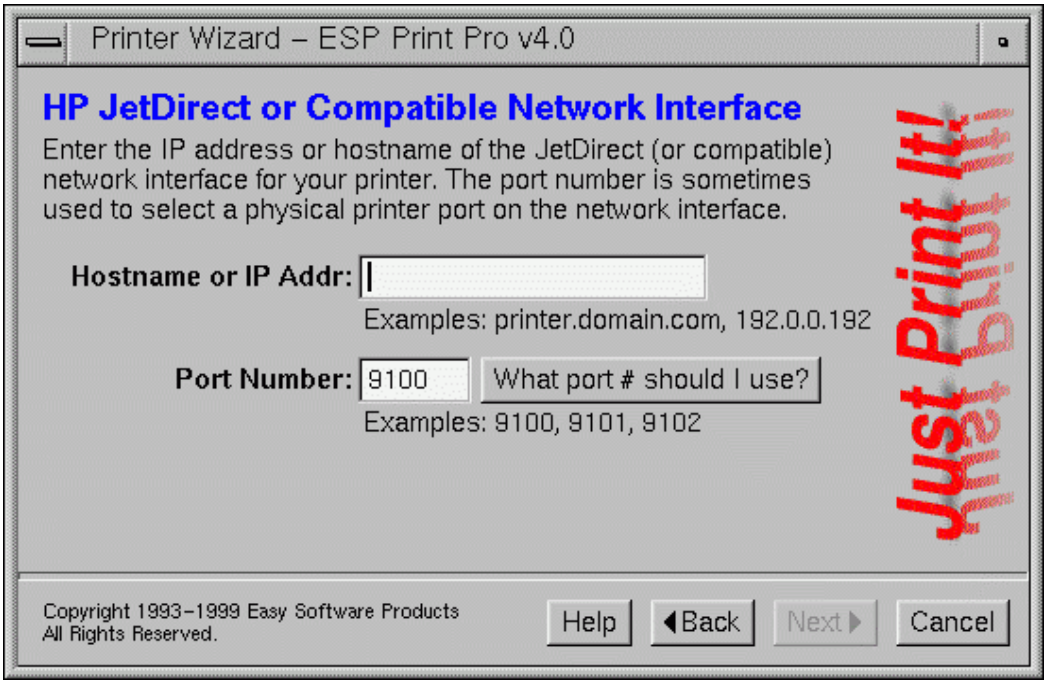

Figure 7 − The Printer Wizard JetDirect Configuration Page.

Choosing a JetDirect Interface

The JetDirect configuration page appears if you choose *JetDirect or compatible* on the connection page. To select the JetDirect interface for your printer, enter the IP address (or hostname) and port number (usually 9100) of the JetDirect interface.

If you are unsure about the current IP address of a JetDirect interface, you may print a test page on the printer to see the current IP address. Press the *Test* button on JetDirect EX print servers.

For compatible network interfaces consult Appendix A for the proper port number assignments.

Click on the *Next* button to proceed.

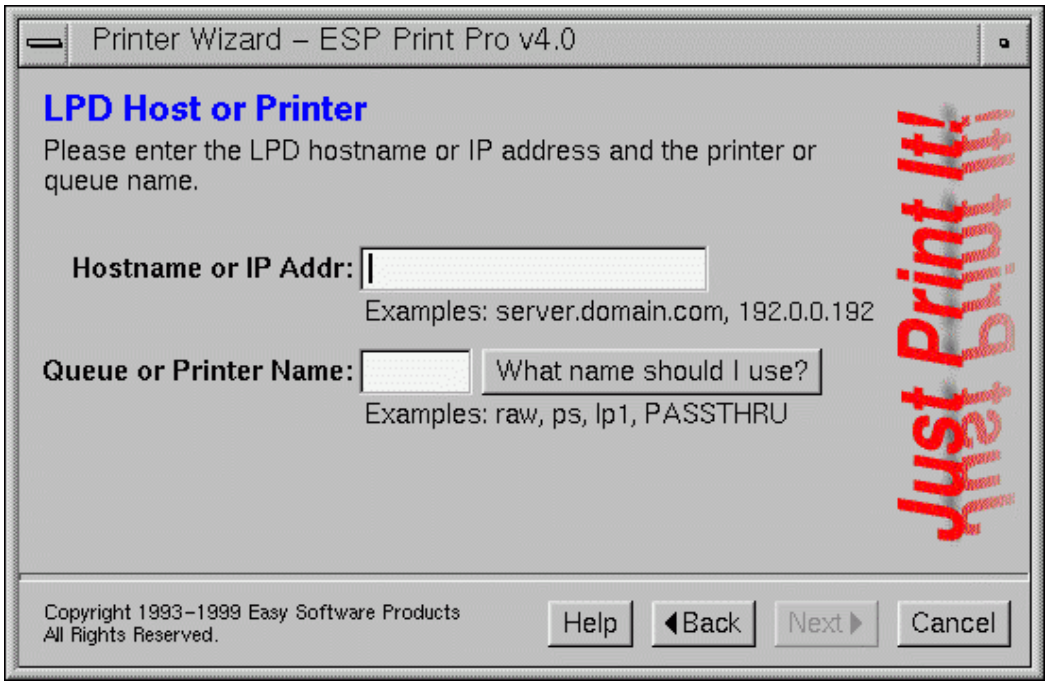

Figure 8 − The Printer Wizard LPD Printer Selection Page.

Choosing a LPD Host or Printer

The LPD printer selection page appears if you choose *LPD/LPR Host/Printer* on the connection screen. To select the host for your printer, enter the IP address (or hostname) and queue name.

If you are unsure about the queue name to use consult Appendix A for the proper queue names.

Click on the *Next* button to proceed.

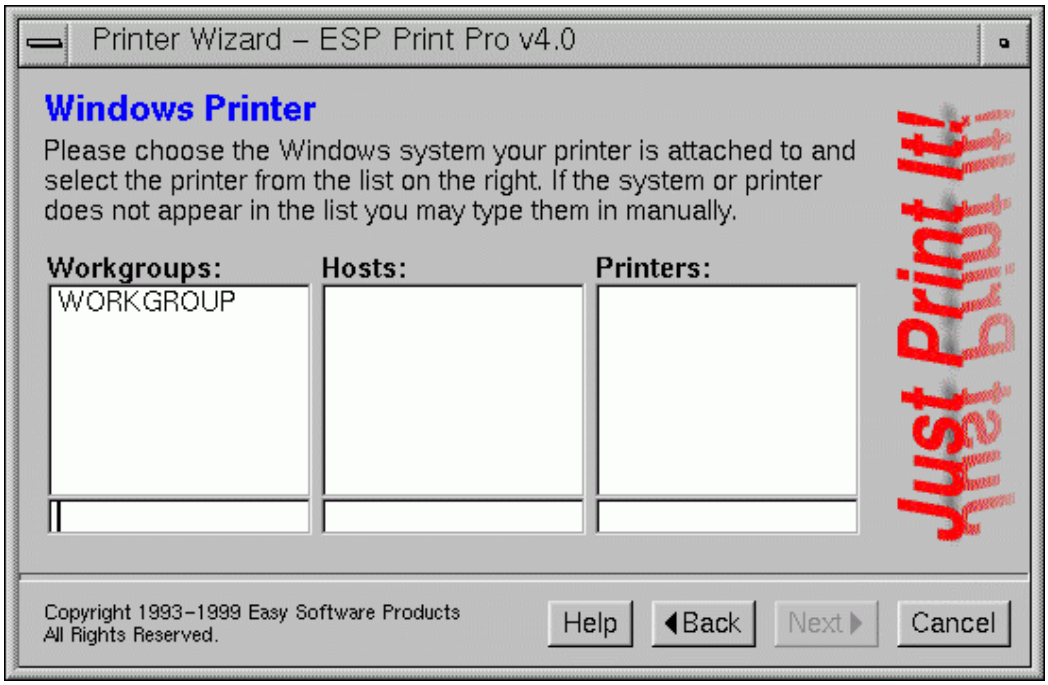

Figure 9 − The Printer Wizard Microsoft Windows Printer Selection Page.

Choosing a Microsoft Windows Printer

The Microsoft Windows printer selection page appears if you choose *Windows 95/98/NT Server via SAMBA* on the connection page. To select the host for your printer, start by clicking on the workgroup for the system, and then on the corresponding system shown in the list of hosts. When you choose a host the list of available printers will be displayed on the right. Click on the desired printer to finish selecting your printer.

Click on the *Next* button to proceed.

If the *Windows 95/98/NT Server via SAMBA* button is greyed out, see Appendix D for information on configuring SAMBA for ESP Print Pro.

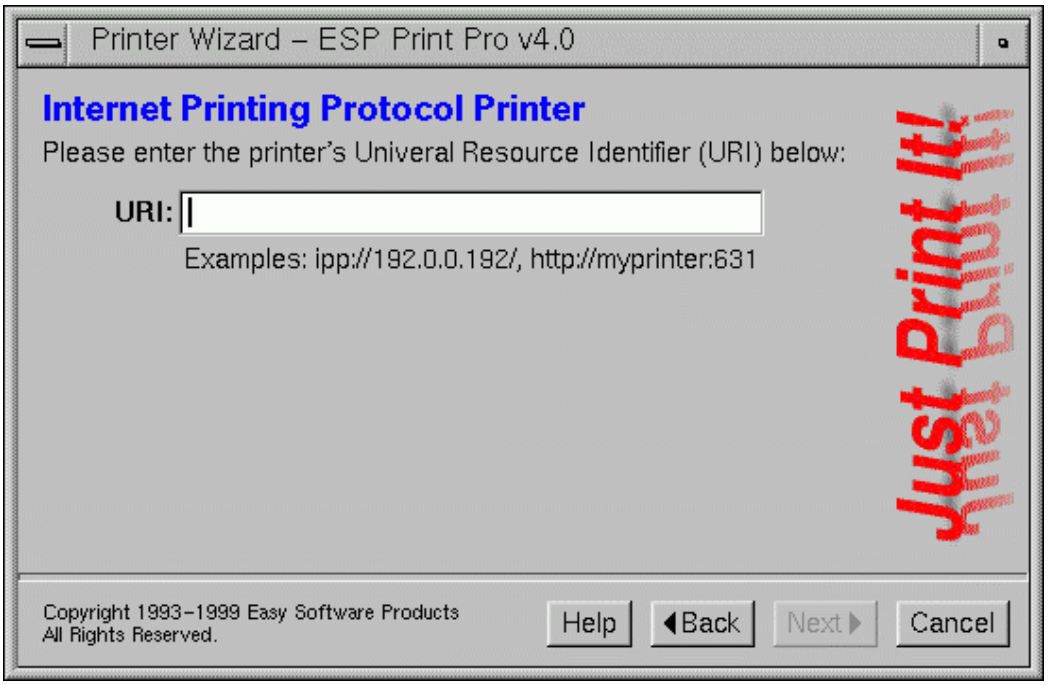

Figure 10 − The Printer Wizard Internet Printing Protocol Configuration Page.

Choosing an IPP Printer

The IPP printer selection page appears if you choose *Internet Printing Protocol* on the connection screen. Enter the URI for the printer or host in the *URI* field.

Click on the *Next* button to proceed.

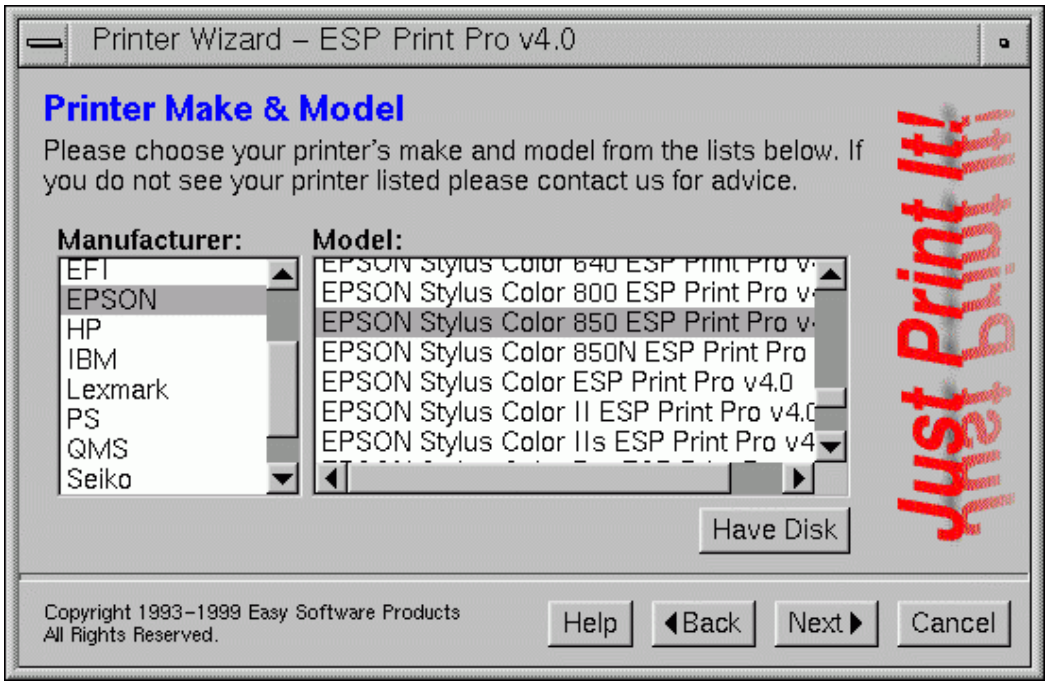

Figure 11 − The Printer Wizard Printer Driver Selection Page.

Choosing a Printer Driver

The printer driver selection page appears after you have chosen the connection for your printer. To choose a printer driver start by clicking on the printer's manufacturer from the list on the left side of this screen. If you do not see your manufacturer listed you may need to scroll the list downward by dragging the bar on the right side of the list.

Once you have selected the manufacturer the complete list of printers will be shown in the righthand list. Choose your printer from the list (scrolling the list as necessary) by clicking the left mouse button.

Click on the *Next* button to add the printer.

Setting the Default Printer Options

After you have added a printer to the system, you should set the default printer options which are used unless a user overrides them. This also allows you to configure the hardware options that are installed in the printer, if any.

To set the default printer options, click on the *Set Default Options* button. Follow the instructions in the ESP Print Pro Software Users Manual, Chapter 3, to finish setting the options.

Sending a Test Page

To send a test page to the printer, click on the *Print Test Page* button. The test page should look like Figure 12.

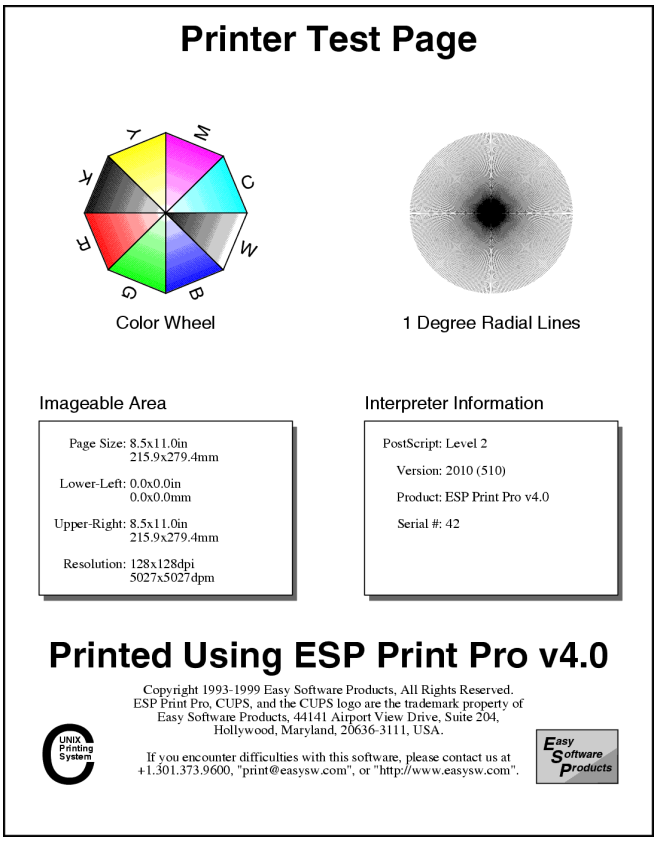

Figure 12 − Printer Test Page.

Adding Another Printer

To add another printer to your system, click on the *Add Another Printer* button.

Exiting the Printer Wizard

To exit the Printer Wizard window click on the *Close* button.

Modifying an Existing Printer

To modify an existing printer simply click on the printer's icon and choose *Modify...* from the *Action* menu.

Deleting a Printer

To modify an existing printer simply click on the printer's icon and choose *Delete...* from the *Action* menu.

Adding Printer Classes

Printer classes allow you to group similar printers together. Jobs sent to a printer class are forwarded to the first available printer in the class for printing.

To add a printer class, click on the *Classes* button in the tool bar and choose *Add...* from the *Action* menu. The Class Wizard (Figure 12) will then appear.

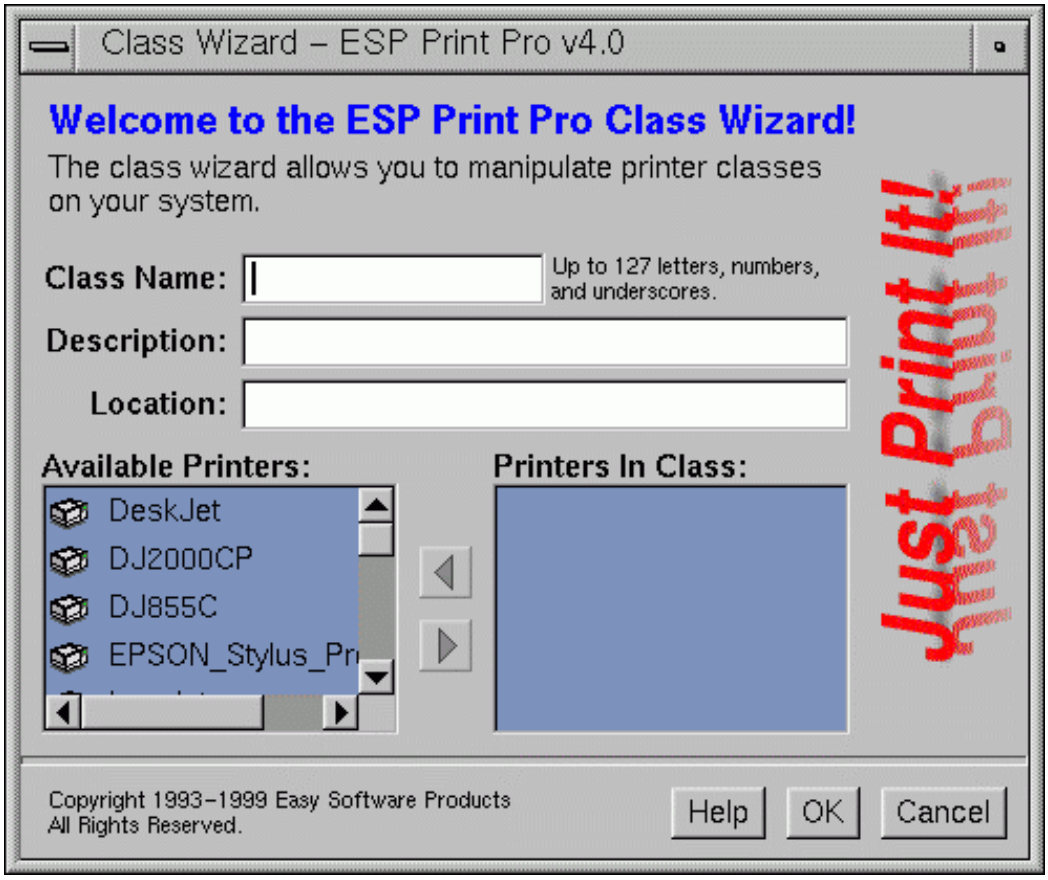

Figure 12 − The Class Wizard.

Class Name

The class name can be any combination of letters, numbers, and underscores up to 127 characters.

Class Description

The class description is a textual description of what the class represents, e.g. "All the LaserJets in Lab 2".

Class Location

The class location is a textual description of where the printers in the class are located, e.g. "Lab 2".

Adding and Removing Printers in a Class

At the bottom of the Class Wizard window are two lists. The printers in the list on the right are the printers that are part of the class.

To add printers in the lefthand list to the class, click on a printer icon and click on the right arrow button.

Similarly, to remove printers from the class click on the printer in the righthand list and click on the left arrow button.

Commiting Your Changes to the Class

Click on the *OK* button to commit your changes to the class. To leave everything as it was, click on the *Cancel* button.

Modifying Printer Classes

To modify a printer class, display the list of classes by clicking on the *Classes* button in the tool bar and click on the class you would like to change. Then choose *Modify...* from the *Action* menu to display the Class Wizard window.

Deleting Printer Classes

To delete a printer class, display the list of classes by clicking on the *Classes* button in the tool bar and click on the class you would like to delete. Then choose *Delete...* from the *Action* menu to delete it.

Chapter 4
Printer Management from the Command−Line

This chapter discusses how to add, modify, and delete printer queues and printer classes from the command−line on your system.

The lpadmin Command

The `lpadmin(8)` command allows you to perform most printer administration tasks from the command−line. Since `lpadmin` is an administration command it is located in the */usr/sbin* directory.

Adding and Modifying Printers

To add a printer to ESP Print Pro you simply run the `lpadmin` command with the "−p" option:

```
% /usr/sbin/lpadmin −pprinter −E −vdevice −Pppd ENTER
```

Spaces between the option letter and value are optional.

The *printer* name can be up to 127 letters, digits, and underscores. Unlike other printing systems, the printer name in ESP Print Pro is *not* case−sensitive, so you can't add two printers named `LaserJet` and `laserjet`.

The *device* argument specifies the device URI or filename for the printer. The following devices are supported in a basic installation of ESP Print Pro:

file:/dev/filename

/dev/filename

Sends all output to the specified file.

http://[username:password@]hostname[:port]/resource

ipp://[username:password@]hostname[:port]/resource

Sends all output to the specified IPP printer or server. The *port* parameters defaults to 631.

lpd://hostname/queue

Sends all output to the specified LPD printer queue.

parallel:/dev/filename

Sends all output to the specified parallel port device.

serial:/dev/filename[?options]

Sends all output to the specified serial port device. The *options* can be any of the following separated by the plus (+) character:
`baud=`*`rate`* − Sets the baud rate for the device.
`bits=`*`7 or 8`* − Sets the number of data bits.
`parity=`*`even`* − Sets even parity checking.
`parity=`*`odd`* − Sets odd parity checking.
`parity=`*`none`* − Turns parity checking off.

smb://[username:password@]hostname/queue

Sends all output to the specified SMB (Windows) printer queue using the SAMBA software.

socket://hostname[:port]

Sends all output to the specified printer using the AppSocket protocol. The *port* parameter defaults to 9100.

The *ppd* argument specifies the PostScript Printer Description file to use for this printer. Many options (such as media size, etc.) will not be available if you omit this part of the `lpadmin` command.

Using Standard Printer Drivers

The `lpadmin` command allows you to use "standard" PPD files and interface scripts located in the */usr/share/cups/model* directory with the "−m" option:

```
% /usr/sbin/lpadmin −pprinter −E −vdevice −mmodel ENTER
```

The *model* argument specifies the name of the PPD file or interface script. For example, to add a printer using

the HP DeskJet 855C series driver connected to parallel port 1 under Linux you would use:

```
% /usr/sbin/lpadmin -pDeskJet -E -vparallel:/dev/par1 -mespdj855.ppd.gz ENTER
```

To determine which PPD you need for a particular printer you can do a printer search at:

- http://www.easysw.com/printpro/printers.cgi

Removing Printers

To remove a printer from ESP Print Pro you simply run the `lpadmin` command with the "−x" option:

```
% /usr/sbin/lpadmin -xprinter ENTER
```

Printer Classes

ESP Print Pro allows you to group similar printers in a *printer class*. When a user sends a print job to a class, the job will be processed by the first available printer in that class.

To add a printer to a class you simply run the `lpadmin` command with the "−p" and "−c" options:

```
% /usr/sbin/lpadmin -pprinter -cclass ENTER
```

The *class* is created automatically if it doesn't exist. To remove a class just use the "−x" option:

```
% /usr/sbin/lpadmin -xclass ENTER
```

Setting the Default Printer

To set the default printer or class simply run the `lpadmin` command with the "−d" option:

```
% /usr/sbin/lpadmin -ddestination ENTER
```

The *destination* argument is the name of the printer or class.

Starting and Stopping Printers

The `enable(8)` and `disable(8)` commands start and stop printer queues, respectively:

```
% /usr/bin/enable printer ENTER
% /usr/bin/disable printer ENTER
```

Printers that are disabled may still accept jobs for printing, but won't actually print any files until they are restarted. This is useful if the printer malfunctions and you need time to correct the problem. Any queued jobs are printed after the printer is enabled (started).

Accepting and Rejecting Print Jobs

The `accept(8)` and `reject(8)` commands accept and reject print jobs for the named printer, respectively:

```
% /usr/sbin/accept printer ENTER
% /usr/sbin/reject printer ENTER
```

As noted above, a printer can be stopped and still accept new print jobs. A printer can also be rejecting new print jobs while it finishes those that have been queued. This is useful for when you must perform maintenance on the printer and will not have it available to users for a long period of time.

Chapter 5
Printing System Management

This chapter shows how you can configure the ESP Print Pro server.

Changing the Configuration Files

All of the server configuration files are located in the */var/cups/conf* directory. Once you have made a change to a file you need to restart the ESP Print Pro server by sending it a HUP signal or using the supplied initialization script "*/etc/software/init.d/cups*":

```
% /etc/software/init.d/cups restart ENTER
```

Temporary Files

Normally ESP Print Pro puts all of its temporary files in */var/tmp*. If you'd like to change this directory you'll need to edit the */var/cups/conf/cupsd.conf* file.

Start by creating the new temporary directory and setting the appropriate permissions:

```
% mkdir /foo/bar/tmp ENTER
% chmod a+rwxt /foo/bar/tmp ENTER
```

Then change the line containing the `TempDir` directive in the *cupsd.conf* to the directory that you've created:

```
TempDir /foo/bar/tmp
```

Finally, restart the server as outlined in the first section of this chapter.

Network Configuration

The default configuration of the ESP Print Pro server listens for connections from all network interfaces on port 631 (the standard IPP port). Administration functions are limited to local connections with the appropriate username and password.

If you'd like to limit access to your system you'll need to edit the */var/cups/conf/cupsd.conf* file.

Port

The `Port` directive specifies a port to listen on for all interfaces. Besides the standard IPP port (631) you can also setup your server to listen on the HTTP port (80) to use your CUPS server as a standard web server as well.

Listen

The `Listen` directive specifies a listening address and port, extending the functionality of the `Port` directive. If you want to allow connections only from the local machine you can use:

```
Listen 127.0.0.1:631
```

instead of the `Port` directive.

If you want to limit access to a specific network/subnet, make sure you specify only the network address and not your system's network address!

BrowsePort

The `BrowsePort` directive controls which port is monitored for remote printers. By default it is set to the IPP port (631), however you can change it as needed.

NOTE:

You must set the `BrowsePort` to the same value on all of the systems that you want to see.

BrowseAddress

The `BrowseAddress` directive specifies a broadcast address to use when sending printer status updates over the network. The default browse address is `255.255.255.255` which will send printer information to all subnets.

NOTE:

If you are using HP−UX 10.20 and a subnet that is not 24, 16, or 8 bits, printer browsing (and in fact all broadcast reception) will not work. This problem appears to be fixed in HP−UX 11.0.

Printer Security

ESP Print Pro provides IP and domain−name based access control and Basic authentication.

Location

The `Location` directive defines access control for a specific HTTP directory. The following pseudo directories are provided by the ESP Print Pro server:

- */admin* − This is the URI that must be referenced to do printer administation commands.
- */classes* − This is the URI that must be referenced to access printer classes.
- */jobs* − This is the URI that must be referenced to access jobs.
- */printers* − This is the URI that must be referenced to access printers.

All other directories are taken from the */usr/share/cups/doc* directory.

The `Location` directive surrounds the other access control directives described below. The default server configuration uses:

```
<Location /admin>
AuthType Basic
AuthClass System

Order Deny,Allow
Deny From All
Allow From 127.0.0.1
</Location>
```

Order

The `Order` directive defines the default access control. The following values are supported:

- `Order Allow,Deny` − Allow requests from all systems *except* for those listed in a `Deny` directive.
- `Order Deny,Allow` − Allow requests only from those listed in an `Allow` directive.

The `Order` directive must appear inside a `Location` directive.

Allow

The `Allow` directive specifies a hostname, IP address, or network that is allowed access to the server:

```
Allow from All
Allow from None
Allow from *.domain.com
Allow from .domain.com
Allow from host.domain.com
Allow from nnn.*
Allow from nnn.nnn.*
Allow from nnn.nnn.nnn.*
Allow from nnn.nnn.nnn.nnn
Allow from nnn.nnn.nnn.nnn/mm
```

```
Allow from nnn.nnn.nnn.nnn/mmm.mmm.mmm.mmm
```

`Allow` directives are cummulative, so multiple `Allow` directives can be used to allow access for multiple hosts or networks. The `/mm` notation specifies a CIDR netmask:

mm	netmask
0	0.0.0.0
1	128.0.0.0
2	192.0.0.0
...	...
8	255.0.0.0
16	255.255.0.0
24	255.255.255.0
32	255.255.255.255

The `Allow` directive must appear inside a `Location` directive.

Deny

The `Deny` directive specifies a hostname, IP address, or network that is allowed access to the server:

```
Deny from All
Deny from None
Deny from *.domain.com
Deny from .domain.com
Deny from host.domain.com
Deny from nnn.*
Deny from nnn.nnn.*
Deny from nnn.nnn.nnn.*
Deny from nnn.nnn.nnn.nnn
Deny from nnn.nnn.nnn.nnn/mm
Deny from nnn.nnn.nnn.nnn/mmm.mmm.mmm.mmm
```

`Deny` directives are cummulative, so multiple `Deny` directives can be used to allow access for multiple hosts or networks. The `/mm` notation specifies a CIDR netmask:

mm	netmask
0	0.0.0.0
1	128.0.0.0
2	192.0.0.0
...	...
8	255.0.0.0
16	255.255.0.0

24	255.255.255.0
32	255.255.255.255

The `Deny` directive must appear inside a `Location` directive.

AuthType

The `AuthType` directive defines the type of authentication to perform:

- `None` − No authentication should be performed (default.)
- `Basic` − Basic authentication should be performed using the UNIX password and group files.

The `AuthType` directive must appear inside a `Location` directive.

AuthClass

The `AuthClass` directive defines what level of `Basic` access is required:

- `Anonymous` − No authentication should be performed (default.)
- `User` − A valid username and password is required.
- `System` − A valid username and password is required, and the username must belong to the "sys" group (this can be changed using the `SystemGroup` directive, below.)
- `Group` − A valid username and password is required, and the username must belong to the group named by the `AuthGroupName` directive.

The `AuthClass` directive must appear inside a `Location` directive.

AuthGroupName

The `AuthGroupName` directive sets the group to use for `Group` authentication.

The `AuthGroupName` directive must appear inside a `Location` directive.

SystemGroup

The `SystemGroup` directive sets the administration group used when authenticating the `System` type. It defaults to the "sys", "system", or "root" group depending on the operating system.

File Formats

ESP Print Pro provides a MIME−based file typing and filtering mechanism to convert files to a printable format for each printer. The *mime.types* and *mime.convs* files define the file type and filters that are available on the system.

mime.types

The *mime.types* defines the known file types. Each line of the file starts with the MIME type and may be followed by one or more file type recognition rules. For example, the `text/html` file type is defined as:

```
text/html html htm \
          printable(0,1024) + (string(0,"<HTML>") string(0,"<!DOCTYPE"))
```

The first two rules say that any file with an extension of ".html" or ".htm" is an HTML file. The third rule says that any file whose first 1024 characters are printable text and starts with the strings "<HTML>" or "<!DOCTYPE" is an HTML file as well.

The first two rules deal solely with the name of the file being typed. This is useful when the original filename is known, however for print files the server doesn't always have a filename to work with. The third rule takes care of this possibility and automatically figures out the file type based upon the contents of the file instead.

The available tests are:

- `( expr )` − Parenthesis for expression grouping
- `+` − Logical AND
- `,` or whitespace − Logical OR
- `!` − Logical NOT
- `match("pattern")` − Pattern match on filename
- `extension` − Pattern match on "*.extension"
- `ascii(offset,length)` − True if bytes are valid printable ASCII (CR, NL, TAB, BS, 32−126)
- `printable(offset,length)` − True if bytes are printable 8−bit chars (CR, NL, TAB, BS, 32−126, 160−254)
- `string(offset,"string")` − True if bytes are identical to string
- `char(offset,value)` − True if byte is identical
- `short(offset,value)` − True if 16−bit integer is identical (network or "big−endian" byte order)
- `int(offset,value)` − True if 32−bit integer is identical (network or "big−endian" byte order)
- `locale("string")` − True if current locale matches string

mime.convs

The *mime.convs* file defines all of the filter programs that are known to the system. Each line consists of:

```
source destination cost program

text/plain application/postscript 50 texttops
application/vnd.cups-postscript application/vnd.cups-raster 50 pstoraster
image/* application/vnd.cups-postscript 50 imagetops
image/* application/vnd.cups-raster 50 imagetoraster
```

The *source* field is a MIME type, optionally using a wildcard for the super−type or sub−type (e.g. "text/plain", "image/*", "*/postscript").

The *destination* field is a MIME type defined in the `mime.types` file.

The *cost* field defines a relative cost for the filtering operation from 1 to 100. The cost is used to choose

between two different sets of filters when converting a file. For example, to convert from `image/jpeg` to `application/vnd.cups-raster`, you could use the `imagetops` and `pstoraster` filters for a total cost of 100, or the `imagetoraster` filter for a total cost of 50.

The *program* field defines the filter program to run; the special program "-" can be used to make two file types equivalent. The program must accept the standard filter arguments and environment variables described in the CUPS Interface Design Document:

```
program job user title options [filename]
```

If specified, the *filename* argument defines a file to read when filtering, otherwise the filter must read from the standard input. All filtered output must go to the standard output.

Chapter 6
Printer Accounting

This chapter describes the ESP Print Pro log files.

Where to Find the Log Files

The log files are normally stored in the */var/cups/logs* directory. You can change this by editing the */var/cups/conf/cupsd.conf* configuration file.

The access_log File

The *access_log* file lists each HTTP resource that is accessed by a web browser or CUPS/IPP client. Each line is in the so−called "Common Log Format" used by many web servers and web reporting tools:

```
host group user date−time \"method resource version\" status bytes

127.0.0.1 − − [20/May/1999:19:20:29 +0000] "POST /admin/ HTTP/1.1" 401 0
127.0.0.1 − mike [20/May/1999:19:20:31 +0000] "POST /admin/ HTTP/1.1" 200 0
```

The *host* field will normally only be an IP address unless you have changed the `HostnameLookups` directive in the *cupsd.conf* file.

The *group* field always contains "−".

The *user* field is the authenticated username of the requesting user. If no username and password is supplied for the request then this field contains "−".

The *date−time* field is the date and time of the request in Greenwich Mean Time (a.k.a. ZULU) and is in the format:

```
[DD/MON/YYYY:HH:MM:SS +0000]
```

The *method* field is the HTTP method used ("GET", "PUT", "POST", etc.)

The *resource* field is the filename of the requested resource.

The *version* field is the HTTP specification version used by the client. For CUPS clients this will always be "HTTP/1.1".

The *status* field contains the HTTP result status of the request. Usually it is "200", but other HTTP status codes are possible. For example, 401 is the "unauthorized access" status in the example above.

The *bytes* field contains the number of bytes in the request. For POST requests the *bytes* field contains the number of bytes of non−IPP data that is received from the client.

The error_log File

The *error_log* file lists messages from the scheduler (errors, warnings, etc.):

```
level date−time message

I [20/May/1999:19:18:28 +0000] Job 1 queued on 'DeskJet' by 'mike'.
I [20/May/1999:19:21:02 +0000] Job 2 queued on 'DeskJet' by 'mike'.
I [20/May/1999:19:22:24 +0000] Job 2 was cancelled by 'mike'.
```

The *level* field contains the type of message:

- `E` − An error occurred.
- `W` − The server was unable to perform some action.
- `I` − Informational message.
- `D` − Debugging message.

The *date−time* field contains the date and time of when the page started printing. The format of this field is identical to the *data−time* field in the `access_log` file.

The *message* field contains a free−form textual message.

The page_log File

The *page_log* file lists each page that is sent to a printer. Each line contains the following information:

```
printer user job−id date−time page−number num−copies

DeskJet root 2 [20/May/1999:19:21:05 +0000] 1 0
```

The *printer* field contains the name of the printer that printed the page. If you send a job to a printer class, this field will contain the name of the printer that was assigned the job.

The *user* field contains the name of the user (the IPP `requesting-user-name` attribute) that submitted this file for printing.

The *job-id* field contains the job number of the page being printed. Job numbers are reset to 1 whenever the ESP Print Pro server is started, so don't depend on this number being unique!

The *date-time* field contains the date and time of when the page started printing. The format of this field is identical to the *data-time* field in the `access_log` file.

The *page-number* and *num-pages* fields contain the page number and number of copies being printed of that page. For printers that cannot produce copies on their own, the *num-pages* field will always be 1.

Chapter 7
Client System Configuration

This chapter covers how to setup and maintain client systems.

Server Installation

The ESP Print Pro software should be installed on the server machine as outlined in Chapter 2, Installing the ESP Print Pro Software.

Servers that support clients running ESP Print Pro or CUPS require a Multi−User or Enterprise license. The Standalone license does not allow client machines to send print jobs to a server machine.

Client Installation

All client machines must be running ESP Print Pro or CUPS. Since a client machine does not print directly to a printer, you only need to load the ESP Print Pro Base software on each client machine as described in Chapter 2, Installing the ESP Print Pro Software.

Unless a client machine also has an attached printer, no software license is required on the client system.

Client Configuration

If the server and client machines are on the same subnet then no additional configuration is required. The client machine will automatically see the printers that are available on the server machine(s) and make them available to the users.

If the server and client machines are not on the same subnet, you need to tell the client machine what server to use.

Configuring the Server Name for All Users

The `/var/cups/conf/cupsd.conf` file contains the default server information. Edit the file using your favorite text editor and add a line reading:

```
ServerName server.domain.com
```

to the first line of the file. Replace the *server.domain.com* shown above with the actual hostname (or IP address) of your server machine.

Configuring the Server Name for a Single User

The CUPS_SERVER environment variable can be used to specify a different default print server. For Bourne and Korn shells, use the commands:

```
% CUPS_SERVER=server.domain.com ENTER
% export CUPS_SERVER ENTER
```

For C Shell and TCSH use the command:

```
% setenv CUPS_SERVER server.domain.com ENTER
```

Replace the *server.domain.com* shown above with the actual hostname (or IP address) of your server machine.

Appendix A
Network Interface Reference

This appendix covers many of the popular TCP/IP network interfaces and printer servers available on the market today.

Configuring a Network Interface

When you first install a network printer or print server on your LAN, you need to set the Internet Protocol ("IP") address. On most higher−end "workgroup" printers, you can set the address through the printer control panel.

However, in most cases you will want to assign the addresses remotely from your workstation. This makes administration a bit easier and avoids assigning duplicate addresses accidentally.

To setup your printer or print server for remote address assignment, you'll need the Ethernet Media Access Control ("MAC") address. This can be found on the printer test page or often on the bottom of the print server.

Configuring the IP Address Using RARP

The most common way to remotely assign IP addresses under IRIX is through the Reverse Address Resolution Protocol ("RARP"). The `rarpd(1m)` program manages this protocol and can be enabled using the command:

```
# chkconfig rarpd on ENTER
```

The `rarpd` program reads a list of Ethernet and IP addresses from the file */etc/ethers*. Each line contains the Ethernet address (colon delimited) followed by an IP address or hostname like:

```
08:00:69:00:12:34 myprinter.mydomain.com
08:00:69:00:12:34 192.0.2.2
```

To set the address of a network interface, add a line to this file, reboot your workstation, and cycle the power on the printer or print server.

Configuring the IP Address Using BOOTP

The BOOTP protocol is used when you need to provide additional information such as the location of a configuration file to the network interface. Using the standard `bootpd(1m)` program supplied with UNIX you simply need to add a line to the */etc/bootptab* file:

```
myprinter 08:00:69:00:12:34 192.0.2.2 myprinter.boot
```

The `bootpd(1m)` program supplied with HP−UX and Linux provides additional functionality and has a slightly different */etc/bootptab* file format:

```
myprinter:ha=080069001234:ip=192.0.2.2:t144=myprinter.boot
```

The *myprinter.boot* file resides in the */usr/local/boot* directory by default. If you do not need to provide a boot file you may leave the last part of the line blank.

Configuring Axis Print Servers

The Axis print servers can be configured using RARP or BOOTP. However, an additional step must be performed to configure the TCP/IP portion of the print server for use with ESP Print Pro.

Each print server contains a configuration file named *config* that contains a list of network parameters used by the server. To modify this file you must first download it from the print server using the `ftp(1)` program:

```
# ftp ip−address ENTER
Connected to ip−address.
220 Axis NPS ### FTP Printer Server V#.## MON DD YEAR ready.
ftp> user root ENTER
331 User name ok, need password
Password: pass ENTER (this is not echoed)
230 User logged in
ftp> get config ENTER
local: config remote: config
200 PORT command successful.
150 Opening data connection for config (192,0,2,2),
(mode ascii).
226 Transfer complete.
##### bytes received in #.## seconds (##### Kbytes/s)
ftp> quit ENTER
221 Goodbye.
```

Next, edit the file with your favorite text editor and locate the lines beginning with:

```
RTN_OPT.     : YES
RTEL_PR1.    : 0
RTEL_PR2.    : 0
RTEL_PR3.    : 0
RTEL_PR4.    : 0
RTEL_PR5.    : 0
RTEL_PR6.    : 0
RTEL_PR7.    : 0
RTEL_PR8.    : 0
```

Change the RTN_OPT line to read:

```
RTN_OPT.     : NO
```

This disables the Reverse TELNET protocol and enables the standard TELNET protocol on the print server. Next, assign a port number for each parallel and serial port on the server as follows:

```
RTEL_PR1.    : 9100
RTEL_PR2.    : 9101
RTEL_PR3.    : 9102
RTEL_PR4.    : 9103
RTEL_PR5.    : 9104
RTEL_PR6.    : 9105
RTEL_PR7.    : 9106
RTEL_PR8.    : 9107
```

This essentially makes the Axis print server look like a Hewlett Packard JetDirect EX print server. Save the file and then upload the new config using the ftp command:

```
# ftp ip-address ENTER
Connected to ip-address.
220 Axis NPS ### FTP Printer Server V#.## MON DD YEAR ready.
ftp> user root ENTER
331 User name ok, need password
Password: pass ENTER (this is not echoed)
230 User logged in
ftp> put config CONFIG ENTER
local: config remote: CONFIG
200 PORT command successful.
150 Opening data connection for config (192,0,2,2), (mode ascii).
226 Transfer complete.
##### bytes received in #.## seconds (##### Kbytes/s)
ftp> get hardreset ENTER
local: hardreset remote: hardreset
200 PORT command successful.
421 Axis NPS ### hard reset, closing connection.
ftp> quit ENTER
221 Goodbye.
```

The Axis print server is now ready for use!

Verifying the Printer Connection

To test that the IP address has been successfully assigned and that the printer is properly connected to your LAN, type:

```
# /usr/etc/ping ip-address ENTER (Digital UNIX, IRIX, Linux)
```

```
# /usr/sbin/ping ip-address ENTER (Solaris and HP-UX)
```

If the connection is working properly you will see something like:

```
# ping myprinter ENTER
PING myprinter (192.0.2.2): 56 data bytes
64 bytes from 192.0.2.2: icmp_seq=0 ttl=15 time=5 ms
64 bytes from 192.0.2.2: icmp_seq=1 ttl=15 time=3 ms
64 bytes from 192.0.2.2: icmp_seq=2 ttl=15 time=3 ms
64 bytes from 192.0.2.2: icmp_seq=3 ttl=15 time=3 ms
```

If not, verify that the printer is connected to the LAN, it is powered on, and that the IP address is set correctly.

Common Network Interface Settings

The following is a list of common network interfaces and printer servers and the settings you should use with ESP Print Pro:

Model/Manufacturer	Connection Type	Port number or printer
Apple LaserWriter	LPD	PASSTHRU
Axis	JetDirect	9100, 9101, etc.
Castelle LANpress™	LPD	pr1, pr2, etc.
DPI NETPrint	LPD	pr1, pr2, etc
EFI® Fiery RIP	LPD	print
EPSON® Multiprotocol Ethernet Interface Board	JetDirect	9100
Extended System ExtendNET	LPD	pr1, pr2, etc.
Hewlett Packard JetDirect	JetDirect	9100
Hewlett Packard JetDirect EX	JetDirect	9100, 9101, 9102
Intel® NetportExpress XL, PRO/100	LPD	LPT1_PASSTHRU, LPT2_PASSTHRU, COM1_PASSTHRU
Lexmark™ MarkNet	LPD	ps
Linksys EtherFast®	JetDirect	4010, 4020, 4030
Kodak®	LPD	ps
QMS® CrownNet™	LPD	ps
Tektronix® PhaserShare™	JetDirect	9100
XEROX®	JetDirect	5503

Appendix B
Solving Common Printing Problems

This appendix covers many of the common problems first−time users encounter when installing and configuring the ESP Print Pro software. If you do not see your problem listed here you may receive free technical support through any of the following channels:

1. WWW: *http://www.easysw.com/support.html*
2. EMail: print@easysw.com
3. Telephone (M−F, 9−5 EST): +1.301.373.9603

Please be ready to provide system and software version information. If possible, contact us from a location near or at the affected machine or printer so we may more rapidly assist you.

Also, additional diagnostic information is available in the */var/cups/logs/error_log* file that may be of importance in diagnosing the problem.

The Printing Tools Don't Recognize My Username or Password!

ESP Print Pro will ask you for a UNIX username and password when you perform printer administration tasks. The default configuration requires that you use the `root` username (or another user in the `sys`, `system`, or `root` groups) and the corresponding password to authenticate the request.

ESP Print Pro does not allow you to authenticate an administration request with an account that has no password for security reasons. If you do not have a password on your `root` account then you won't be able

to add printers!

Also, ESP Print Pro only supports `crypt()` passwords. If you have enabled MD5 passwords on your system you cannot use authentication with ESP Print Pro (this will be corrected in a future patch release.)

To disable password authentication you need to edit the */var/cups/conf/cupsd.conf file and comment out the `AuthType Basic` line for the /admin location. Note that this will allow any local user to change your printer and class configuration, but remote administration from another machine will still not be allowed.*

My O2 Stopped Printing!

If your parallel printer suddenly stops printing while the system is running for no apparent reason, you probably have a defective power supply module. To confirm that this is the problem, enter one of the following commands in a UNIX Shell window (you will need to be logged in as root):

- PostScript printers:
  `% cat /usr/share/cups/data/testprint.ps >/dev/plp ENTER`
- Non−PostScript printers:
  `% cat /etc/hosts >/dev/plp ENTER`

If the cat command returns "no such device or address" or "IO error" then your printer is not turned on or the cable is not connected securely. If the command returns immediately with no error (and nothing happens on the printer) then the power supply is defective.

If you have determined that your power supply is defective, contact the Silicon Graphics TAC and request a new power supply. Reference case ID 0830259. This problem appears to occur after approximately 6 months of use and *may* only affect those O2's manufactured between January 1997 and April 1997.

Alt−Print Doesn't Work

If you can't get the Alt−Print key sequence shown in the manual page for the *lpwin* command to work, you are probably running into a bug in the Insignia SoftWindows software installation script.

When you run SoftWindows for the first time it creates (or appends to) the .Xdefaults and .4Dwmrc files in your home directory. Unfortunately the key binding resource that is added to the .Xdefaults file is not properly specified and as a result the Alt−Print key sequence will not work.

To fix the problem edit the .Xdefaults file in your home directory and change the line reading:

```
4Dwm*keyBindings: SoftWindowsKeys
```

to:

```
4Dwm**softWindows**keyBindings: SoftWindowsKeys
```

Once you have saved the change, run the following commands to restart the window manager:

```
% xrdb −load .Xdefaults ENTER
% xrdb −merge .Sgiresources ENTER
% tellwm restart ENTER
```

Connection Refused Messages

Under normal circumstances, "connection refused" messages for a networked printer should be expected from time to time. Most network interfaces only allow a single connection to be made at any given time (one job at a time) and will refuse access to all other systems while the first connection is active.

If the problem persists and you are unable to print any jobs to the printer, verify that another machine is not maintaining a connection with the printer, and that you have selected the proper port or printer name for the printer.

Also, most external print servers will refuse connections if the connected printer is turned off or is off−line. Verify that the affected printer is turned on and is online.

Write Error Messages

If you get the message "WRITE ERROR" in the printer status window, the printer interface (usually a Hewlett Packard JetDirect interface) has timed out and reset the network connection from your workstation.

The error is caused by that startup delay between the initial setup of the printer or plotter and the first page of print data that is sent.

To correct the problem, change the idle timeout on the interface to at least 180 seconds (three minutes). To change the timeout on a Hewlett Packard JetDirect interface, type:

```
# telnet ip−address ENTER

Trying ip−address...
Connected to ip−address.
Escape character is `^]'.

Please type [Return] two times, to initialize telnet configuration
For HELP type "?"
> idle−timeout: 180 ENTER
> quit ENTER
```

No Software License Found Message

This message is often caused by the wrong permissions for the license file, installing the software on the wrong system, or adding a local printer to a client machine.

To check your license file for problems, use the *esplicense* program supplied with ESP Print Pro:

```
# /usr/sbin/esplicense list ENTER
This system reports itself as system #69012345

Product                   Cust #  System #      Expiration
−−−−−−−−−−−−−−−−−−−−−−−−  −−−−−−  −−−−−−−−−−−−  −−−−−−−−−−
```

```
ESP Print Pro Standalone  12345   THIS MACHINE  None (permanent)
```

If the system number does not match the license key, verify the license key string and the system number from your license registration sheet.

How Do I Print a Banner Page?

The current version of ESP Print Pro does not support printing of banner pages. A future release based on CUPS 1.1 will be able to print banner pages of any type.

How Do I Setup ESP Print Pro with CAP?

ESP Print Pro does not include support for printing to remote MacOS computers. Because the CAP LaserWriter server (`lwsrv`) does not support specification of PPD files, we do not recommend that you use CAP with ESP Print Pro.

How Do I Setup ESP Print Pro with XINET KA/Spool?

ESP Print Pro does not include support for printing to remote MacOS computers. To use your system as a print server for MacOS clients, configure each printer using a `papserver` in the */usr/adm/appletalk/services* file, specifying the corresponding PPD file in the */var/cups/ppd* directory for each printer. For a printer named `MyPrinter` the entry would look like:

```
/usr/etc/appletalk/papserver −I −L −P /var/cups/ppd/MyPrinter.ppd \
"Printer Description" MyPrinter
```

Note: Enter the text above on a single line without the backslash (\) character.

How Do I Setup ESP Print Pro with NetATalk?

ESP Print Pro does not include support for printing to remote MacOS computers. To use your system as a print server for MacOS clients, configure each printer in the *papd.conf* file, specifying the corresponding PPD file in the */var/cups/ppd* directory for each printer. For a printer named `MyPrinter` the entry would look like:

```
Printer Description:MyPrinter@MyServer:\
        :pr=|/usr/bin/lp −d MyPrinter:\
        :op=daemon:\
        :pd=/var/cups/ppd/MyPrinter.ppd
```

How Do I Setup ESP Print Pro with SAMBA?

SAMBA 2.0.6 includes support for ESP Print Pro and CUPS. To use ESP Print Pro with older versions of SAMBA configure the *smb.conf* file to use System V printing.

How Do I Setup Client Machines?

Clients running ESP Print Pro or CUPS will automatically see the printers on the servers as long as the client and server are on the same subnet. The server cannot be running ESP Print Pro Standalone, as the standalone version of ESP Print Pro does not support client printing.

Appendix C
List of Installed Files

This appendix lists the files and directories that are installed for ESP Print Pro.

Base Distribution

Pathname	Description
/usr/bin/cancel	The System V cancel job(s) command.
/usr/bin/disable	The System V disable printer command.
/usr/bin/enable	The System V enable printer command.
/usr/bin/glp	The graphical print command.
/usr/bin/glpoptions	The graphical options command.
/usr/bin/lp	The System V print command.
/usr/bin/lpq	The Berkeley status command.
/usr/bin/lpr	The Berkeley print command.
/usr/bin/lprm	The Berkeley cancel job(s) command.
/usr/bin/lpstat	The System V status command.
/usr/bin/lpwin	The screen hardcopy command.
/usr/include/cups/	CUPS API header files.

/usr/lib/libcups.sl.1 /usr/lib/libcupsimage.sl.1	Shared libraries (HP−UX)
/usr/lib32/libcups.so.1 /usr/lib32/libcupsimage.so.1	Shared libraries (IRIX 6.5)
/usr/lib/libcups.so.1 /usr/lib/libcupsimage.so.1	Shared libraries (all others)
/usr/lib/locale/	The location of language−specific message files.
/usr/man/	Man pages (all but IRIX)
/usr/share/catman/a_man/ /usr/share/catman/u_man/	Man pages (IRIX)
/usr/sbin/PrintPanel	A link to the glp command (IRIX only)
/usr/sbin/accept	The accept−jobs command.
/usr/sbin/cupsd	The CUPS print scheduler.
/usr/sbin/esplicense	The ESP license management program.
/usr/sbin/lpadmin	The System V printer administration tool.
/usr/sbin/lpc	The Berkeley printer administration tool.
/usr/sbin/printers	The ESP Print Pro printer administration tool.
/usr/sbin/reject	The reject−jobs command.
/usr/share/cups/data/	The location of filter data files.
/usr/share/cups/data/icons/	Icon files for the ESP Print Pro graphical user interfaces.
/usr/share/cups/data/testprint.ps	The PostScript test page file.
/usr/share/cups/doc/	Documentation and web page data for the scheduler.
/usr/share/cups/fonts/	The location of PostScript fonts for the PostScript RIP.
/usr/share/cups/model/	The location of PostScript Printer Description ("PPD") files and interface scripts that may be used to setup a printer queue.
/usr/share/cups/pstoraster/	Other PostScript RIP initialization files.
/usr/share/cups/pstoraster/Fontmap	The font mapping file (converts filenames to fontnames)
/var/cups/backend/	Backends for various types of printer connections.
/var/cups/cgi−bin/	CGI programs for the scheduler.

/var/cups/conf/classes.conf	The printer classes configuration file for the scheduler.
/var/cups/conf/cupsd.conf	The scheduler configuration file.
/var/cups/conf/mime.convs	The list of standard file filters included with ESP Print Pro.
/var/cups/conf/mime.types	The list of recognized file types for ESP Print Pro.
/var/cups/conf/printers.conf	The printer configuration file for the scheduler.
/var/cups/filter/	Filters for various types of files.
/var/cups/interfaces/	The location of System V interface scripts for printers.
/var/cups/logs/	The location of scheduler log files.
/var/cups/ppd/	The location of PostScript Printer Description ("PPD") files for printers.
/var/cups/requests/	The location of print files waiting to be printed.

Appendix D
Using ESP Print Pro with SAMBA

This appendix describes how to use ESP Print Pro with SAMBA.

What is SAMBA?

In case you haven't heard of SAMBA, it is basically a software package that allows you to configure your UNIX system as a Windows file and printer server. It also allows you to access files and printers on a Windows system. SAMBA is free software.

SAMBA version 2.0.6 is the first release of SAMBA that supports ESP Print Pro. You can download SAMBA from:

http://www.samba.org

How Do I Configure SAMBA for ESP Print Pro?

When you want remote Windows users to print using the queues you have added with ESP Print Pro, you need to configure SAMBA to use ESP Print Pro.

To configure SAMBA for ESP Print Pro, edit the `smb.conf` file and replace the existing printing commands and options with the line:

```
printing = cups
```

That's all there is to it! Remote users will now be able to browse and print to printers on your system.

How Do I Configure ESP Print Pro for SAMBA?

If you want to access printers on systems running Windows, you need to configure ESP Print Pro to use SAMBA.

To configure ESP Print Pro for SAMBA, run the following command:

```
% ln -s `which smbspool` /var/cups/backend/smb ENTER
```

The `smbspool` program is provided with SAMBA starting with SAMBA 2.0.6. Once you have made the link you can choose the Microsoft Windows via SAMBA type of connection in the printer wizard window.